Isolated Dissection Of The Celiac Axis Or Superior Mesenteric Artery (SMA) May Be Symptomatic Or Asymptomatic: Natural History And How Best To Treat

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Spontaneous isolated dissection of the superior mesenteric artery (SIDSMA)
Spontaneous isolated dissection of the celiac artery (SIDCA)
A rare condition
- Incidence: 0.06-0.09%
- Lack of reliable laboratory findings
- Most cases have been reported in Asian countries
- Unknown etiology
  - Mechanical stress at the anterior wall of SMA near the convex curvature
  - Hypertension
  - Genetic factor: heterogeneity of a chromosome locus at 5q13-14, found to be linked to familial ascending aortic aneurysms and dissection

Spontaneous isolated dissection of the superior mesenteric artery (SIDSMA)
Spontaneous isolated dissection of the celiac artery (SIDCA)
- Symptoms
  - Asymptomatic to acute peritonitis
  - Acute abdominal pain: 78-91%
    - Self remission within one week
    - Recurrent abdominal pain: usually 6 months after acute onset
  - Male, Asian, smokers, Hypertension, middle age

Spontaneous isolated dissection of the superior mesenteric artery (SIDSMA)
Morphologic classification of SIDSMA

- None of these classifications can predict the clinical course
- Symptoms
  - Stenosis of the true lumen
  - The length of dissection

Disclosures
- None
### Treatment options for SIDCA and SIDSMA

**Conservative treatment**
- Bowel rest, hydration, analgesia, blood pressure control
- Antithrombotic or antiplatelet agents
- Controversial

**Endovascular stenting**

**Open surgical repair**

### Asymptomatic for SIDCA and SIDSMA

**Initial conservative treatment is safe**

**None of them required secondary intervention**

*Meta-analysis, 200 pts*  

**Antithrombotic therapy, no benefits either clinical or morphologic outcomes**


### Symptomatic for SIDCA and SIDSMA

**Conservative management still remained the most common initial treatment**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient number</strong></td>
<td>904</td>
<td>514</td>
</tr>
<tr>
<td><strong>Conservative number</strong></td>
<td>774 (85.6%)</td>
<td>447 (87%)</td>
</tr>
<tr>
<td><strong>Secondary intervention</strong></td>
<td>8-12%</td>
<td>11.2-14.9%</td>
</tr>
<tr>
<td><strong>All-cause mortality</strong></td>
<td>1-2% at 28 months</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Complete or partial remodeling</strong></td>
<td>49-51%</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Antithrombotic agents</strong></td>
<td>N/A</td>
<td>No difference in conversion rate</td>
</tr>
</tbody>
</table>
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W7 (84% treat with endovascular)
WuIHui, 11/15/2019

W9 SIDCA: 95%
SIDSMA: 87%
WuIHui, 11/15/2019

W10 SIDCA: SIDSMA
WuIHui, 11/15/2019

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W7 (84% treat with endovascular)
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W9 SIDCA: 95%
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W10 SIDCA: SIDSMA
WuIHui, 11/15/2019
Proportion achieved complete remodeling

- **SIDCA** > **SIDSMA**
- Symptomatic > Asymptomatic (OR, 3.95; 95% CI, 1.31-11.85)
- Complete remodeling
  - Mean time: 16 ± 16 months (range, 3-63 months) after initial pain relief
  - 61% within 12 months
  - 81% within 24 months
- Dissection progression or aneurysmal formation: 3%

Endovascular intervention

- Persistent symptoms, dissection progression, bowel gangrene, and aneurysmal degeneration
- 16.2%–33.6% as the initial treatment
- 93.5–95.7% symptom relief
- 7/97 (7%) required re-intervention due to ISR

Open surgery

- Bowel infarction or necrosis, peritonitis, or aneurysm rupture
- 3.2%–5.1% as the initial treatment
- 1/34 (2.9%) required re-intervention due to graft thrombosis

Morphologic changes of lesion vessels

Proportion achieved complete remodeling after conservative treatment

- **SIDCA** > **SIDSMA**
- Complete remodeling: (64% VS. 25%, P<0.05)
- Symptomatic > Asymptomatic (OR, 3.95; 95% CI, 1.31-11.85)
- Complete remodeling
  - Mean time: 16 ± 16 months (range, 3-63 months) after initial pain relief
  - 61% within 12 months
  - 81% within 24 months
  - Dissection progression or aneurysmal formation: 3%

Proportion achieved complete remodeling after endovascular treatment

- Single center: 2011-2016, 128 pts
  - All-cause mortality: 3/34 (8.8%) required re-intervention due to graft thrombosis

Morphologic changes of lesion vessels

Proportion achieved complete remodeling after endovascular treatment

- Single center: 2011-2016, 128 pts
  - Stent group vs non-stent group: 95.8% vs 62.5% at three years
  - Primary stent patency rate: 99.1%
  - SIDSMA stenting group vs non-stent group: 88.3% vs 6.3%

- Secondary intervention
  - 0.9% vs 25%

- Asymptomatic (OR, 3.95; 95% CI, 1.31-11.85)

- Persistent symptoms, dissection progression, bowel gangrene, and aneurysmal degeneration
  - 16.2%–33.6% as the initial treatment
  - 93.5–95.7% symptom relief
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(84% treat with endovascular)

SIDCA: 95%
SIDSMA: 87%

SIDCA: SIDSMA
Proportion achieved complete remodeling after endovascular treatment

- Single center: 2011-2016, 128 pts
- Stent: 87.5%
- SMA remodeling
  - SMA stent group vs non-stent group: 88.3% vs 6.3%
- Recurrent symptom
  - Stent group vs non-stent group: 0.9% vs 25%
- Survival
  - Stents group vs non-stent group: 95.8% vs 62.5% at three years
- Primary stent patency rate: 99.1%

Morphologic changes of lesion vessels after endovascular treatment

- Duration of symptoms (day): 2.90 ± 2.20
- Male: 69.2%
- Intervention
  - TRUE T0: 86.7 ± 1.72
  - TRUE T1: 86.7 ± 1.72
  - TRUE T2: 86.7 ± 1.72

Treatment

- Conservative
  - 27/39 (69.3%)
  - Duration of symptoms (day): 1.28 ± 1.72
- Endovascular stenting
  - 11/39 (28.2%)
  - Duration of symptoms: 2.90 ± 2.20
- Open bypass
  - 1/39 (2.5%)
  - Duration of symptoms: 0

Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>True lumen difference</th>
<th>False lumen difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>β: 0.0000</td>
<td>β: 0.0000</td>
</tr>
<tr>
<td>Antecogulation</td>
<td>-0.0000</td>
<td>-0.0000</td>
</tr>
<tr>
<td>Symptomatic</td>
<td>-0.0000</td>
<td>-0.0000</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>-0.0000</td>
<td>-0.0000</td>
</tr>
<tr>
<td>CT scan</td>
<td>-0.0000</td>
<td>-0.0000</td>
</tr>
</tbody>
</table>
| National Taiwan University Hospital

- Total: 39
  - SIDSMA: 34
  - SIDCA: 5
- Male
  - SIDSMA: 91.2%
  - SIDCA-100%
- Symptomatic
  - SIDSMA: 70.6%
  - SIDCA-100%
- CT scan: 100%

Nakamura I, II, III, IV, V, VI, VII

Morphologic changes of lesion vessels

- Proportion achieved complete remodeling after endovascular treatment
  - Single center: 2011-2016, 128 pts
  - Stent: 87.5%
  - SMA remodeling
    - SMA stent group vs non-stent group: 88.3% vs 6.3%
    - Recurrent symptom
      - Stent group vs non-stent group: 0.9% vs 25%
    - Survival
      - Stents group vs non-stent group: 95.8% vs 62.5% at three years
  - Primary stent patency rate: 99.1%

Variables | True lumen difference | False lumen difference
---|---|---
Stent | β: 0.2067, LowerCL: 0.0457, UpperCL: 0.3677, p value: 0.0143 | β: -0.6299, LowerCL: -0.8188, UpperCL: 0.0133
TRUE_TO | β: -0.8951, LowerCL: -1.2975, UpperCL: -0.4932, p value: 0.0214 |

Stent

**Conclusion**

- **Conservative treatment**
  - the majority of patients with SICAD or SISMAD showed clinical improvement
- **Risk factors to improve SMA remodeling**
  - SMA stenting
  - Small true lumen on presentation
  - Yun IIb morphology
    - Better SMA remodeling after stent compared to conservative treatment

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**No Bowel related mortality**

**Asymptomatic**

- **Conservative treatment**
  - Bowel infection
  - Open surgery
  - Clinical and imaging surveillance

**Symptomatic**

- **Conservative treatment**
- **Endovascular therapy**
  - Initial abdominal pain, enlarge aneurysm, progress dissection
- **Clinical and imaging surveillance**

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**Thank You Very Much For Your Attention !!!**